

REMARKS

Claims 1-10 are amended.

Claims 11-17 are new.

Support for the amended and new claims may be found generally throughout the specification, for example, at specification page 4, lines 7-17.

Claims 1-17 remain pending in the application.

Claims 1-10 are rejected under 35 USC §112, second paragraph, for being indefinite.

The claims are rejected for reciting a method without a positive step, reciting unclear language, and including a use claim.

Applicants acknowledge with appreciation the Examiner's suggestion to amend the claims.

The claims are amended to be definite, and withdrawal of the rejection is respectfully requested.

Claim 10 is rejected under 35 USC §101 for reciting a use without setting forth any steps.

Claim 10 is amended to recite a method step.

Therefore, withdrawal of the rejection is respectfully requested.

Claims 1-3 and 9-10 are rejected under 35 USC §102(a) as being anticipated by HINCE US 6,432,693 ("HINCE"). This rejection is respectfully traversed.

HINCE is offered for teaching the presence and degradation of trichloroethylene among other hydrocarbons.

However, HINCE fails to disclose that the contaminants comprise hydrocarbons.

Hydrocarbons are defined by the IUPAC as "compounds consisting of carbon and hydrogen only" (IUPAC, 1995, Vol. 87, page 1341; copy enclosed). Thus, according to this definition, the halogenated organic contaminants mentioned in HINCE do not comprise hydrocarbons. Accordingly, HINCE fails to disclose method for the degradation of aromatic and/or aliphatic hydrocarbons.

HINCE also fails to disclose an aqueous composition, as recited in independent claim 9, and the method of adding such a composition, as recited in claim 10. HINCE is solely directed to solid compositions.

Therefore, HINCE cannot anticipate independent claims 1 and 9, and dependent claims 2-8 and 10-17, and withdrawal of the rejection is respectfully requested.

HINCE also fails to render obvious independent claims 1 and 9, and claims depending therefrom.

HINCE mentions the degradation of the halogenated organic compounds DDT and POE, which both include two phenyl groups. However, the objective of the claimed invention is to provide a method and a mixture for the degradation of any aromatic hydrocarbon, including, for example, benzene, which is

generally the most difficult aromatic soil contaminant to break down (See, e.g., the present application page 6, lines 6-9 or Suarez and Rifai, Bioremediation Journal 3(4) (1999) 337-362).

Applicants surprisingly found that this objective could be met by the use of a specific mixture of at least one electron acceptor and one or more humic acids. HINCE fails to recognize, let alone solve the problems regarding the degradation of aromatic hydrocarbons such as benzene. Thus, the claimed method and mixture recited in claims 1-17 would not have been obvious in view of HINCE.

Indeed, the selection of humic acid itself would not have been obvious. HINCE fails to recognize or suggest the crucial role of humic acids. HINCE merely mentions humic acid as one of the possibilities in a large group of other components ("citric acid, humic acid, fulvic acid, sodium citrate, nitrilotriacetic acid (NTA), and ethylenediaminetetraacetic acid (EDTA) and any combinations thereof") that can be added as "a source of both chelating agents and acidifying agents".

However, humic acid is very different from these alternative components. Humic acids comprise a natural, mixture of many different molecules, including different aromatics. This is essential, because this broad range of molecules apparently triggers the expression, enrichment and activity of a whole range of microorganisms with biodegrading enzymes. It was found that humic acids can initiate degradation of benzene and other

hydrocarbon pollutants in different ways: by activating genes in the microorganisms involved in pollutant degradation, by containing specific molecules used as "vitamins or co-factors" for the synthesis of biodegrading enzymes, or by acting as electron-transfer components between pollutant hydrocarbons, micro-organisms and their final electron acceptor, e.g. nitrate or iron.

None of the alternative components mentioned by HINCE fulfills all of those properties. Therefore, even the use of humic acid in the claimed invention would not have been obvious in view of HINCE.

Claims 4-8 are rejected under 35 USC §103(a) as being unpatentable over HINCE US 6,432,693 ("HINCE"). This rejection is respectfully traversed.

As discussed above, HINCE fails to disclose or suggest a method or mixture for the degradation of hydrocarbons as required by independent claim 1, and the dependent claims.

Therefore, withdrawal of the rejection is respectfully requested.

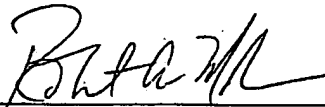
In view of the amendment to the claims and foregoing remarks, the present application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



Robert A. Madsen, Reg. No. 58,543
209 Madison Street, Suite 500
Alexandria, VA 22314
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

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APPENDIX:

The Appendix includes the following item:

-IUPAC Compendium of Chemical Terminology, 1995, Vol. 87, page 1341.

hydrocarbons

Compounds consisting of carbon and hydrogen only.

1995, 67, 1341